WA-Trans Steering Committee Meeting Notes
July 19, 2007

Attendees:

Member	Association	Representing
Tareq Al-Zeer	WSDOT NW Region Maintenance Engineer	WSDOT
Michelle Blake	WSDOT GIS Data Steward	WA-Trans Project
Chuck Buzzard	Pierce County GIS	Local Govt. GIS
David Cullom	WA. Utilities & Transportation Commission	Rail And Utility Needs
Michael Fallon	Bureau of Land Management	Bureau of Land Management
Michaellyn Garcia	Census Bureau	US Bureau of Census
Holly Glaser	WSDOT Geographic Services	WA-Trans (GIS Analyst)
Tami Griffin	WSDOT Geographic Services	WA-Trans (Project Manager), Facilitator
Allyson Jason	U.S. Geological Survey	The National Map
Michael Leierer	WSDOT Geographic Services	WA-Trans (Assistant Project Manager/ Technical Lead)
Mac McKay	WA Department of Natural Resources	WADNR and Natural Resource Business Needs
Andy Norton	Puget Sound Regional Council	MPO and RTPO
Gretchen Volten	Census Bureau	US Bureau of Census
Ian Von Essen	Spokane County GIS	E-911
Pat Whittaker	WSDOT Transportation Data Office	WSDOT Transportation Data Office

Not Attending:

Member	Association	Representing
Kristina Evanoff	Sound Transit	Transit Needs
Kathy O'Shea	Country Road Administration Board	County Road Administration Board
Dave Rideout	Spokane County Engineers Office	East side local government
Lurleen Smith	Mason County Public Works	West side local government
Elizabeth Stratton	WSDOT	Freight Interests
Cathy Udenberg	Walla Walla County Public Works	Local Govt. GIS
Tim Young	WA Dept. of Fish and Wildlife	WA Dept. of Fish and Wildlife

- Introductions, Status Questions, Time Tracking, Action Item Review
- Pend Orielle County Update
- Default Data User Formats
- Accelerated Statewide Implementation
- Metadata Minimum Requirements
- Driveways and Alleys
- Action Item Review and Close

WA-Trans Steering Committee Meeting Notes
July 19, 2007

Introductions, Status Questions, Time Tracking, Action Item Review

Review of Action Items:

Allyson Jason was introduced. She is replacing Sam Bardelson, for the U.S.G.S., who has retired. She had Nancy Tubbs with her from the U.S.G.S. who was a previous steering committee member.

Michaellyn Garcia introduced Grechen Volten from the U.S. Census Bureau. Gretchen may be Michaellyn's backup for WA-Trans as the get busy with other things.

Tami shared about the work the statewide parcel data set group is doing regarding data sharing agreements and other legal documents. This group, lead by Luke Rogers of UW and David Jennings of WA Dept. of Health is working with an assistant AG from UW regarding boilerplate text in support of statewide data sets which may be something WA-Trans can leverage.

Pend Orielle County Update

Ian has arranged to give a presentation at the next WA-Trans meeting on this project. It was presented at the ESRI International User Conference earlier this summer.
Ian reported that the last Pend Orielle GIS Project meeting also included a commissioner. Some agencies and departments within the county are more prepared to deal with the change right away then others. This meeting was very positive. Pend Orielle County recently acquired another grant for elections and they are using that to bring in lots of cadastral data and special purpose district data. For elections, you have to figure out for every bond issue on the ballot who can vote for the approval of that bond and that requires figuring out for every single address within the county what special purpose districts that address lies within. The first step in this process is building these special purpose districts within the GIS and you do that via their legal descriptions some of which are good, some of which are written very poorly, some of which conflict with other legal descriptions, some have no legal's but just have a weird map at a scale of 1:62,000, and finally some have no legal's at all. Prior to entering this special purpose district data into GIS, these districts were happy and ignorant each with its own individual paper map and they did not have a clue that they had conflicting boundaries. Of course, in some instances this can create a real can of worms. All of that is important; however, as many of these boundaries may end up in WA-Trans.
Ian has asked if Pend Orielle County can provide data to WA-Trans fairly soon. Assuming the project has the resources that should not be a problem. We just need to schedule it.
Action Items:

- Tami put the presentation on Pend Orielle County on the agenda for the October meeting.
- Tami will work with the project staff to determine when Pend Orielle County can submit data and to develop a translator.

Default Data User Formats

Michael developed a document (see Appendix A) describing the default data user formats. It included a concepts definition section that included terms like "Road Authority". It also included the idea of "products" out of WA-Trans based on different business needs. It considered the idea of LRS Products based on route milepost and Address Geocoding Product.

Decision: The group discussed the idea of these two products and agreed they were good starting places. It supports what has always been planned.

Michael asked a critical question. Imagine you are looking at the Data User Portal and have a statewide display. As you drill down (zoom in on a display) what is it that is actually seen? There is particular concern with labels of roads, multiple descriptions (road names), scale, etc.

Pat stated you can't have multiple names because there are too many of them. It would be nice to see jurisdictional names (road authority) and you could use colors for types of road.

We would have county lines and county labels.

Chuck said there needs to be options for saying things like "I want to look at all the roads", or "I want to look at all the options", or "I want to look at just the county roads", "I just want to look at the state highways", or "I want to look at everything". Chuck is thinking about being able to select the source. When people go in, there needs to be the ability to say, "I want to extract just a particular type or source of roads" and the viewer will allow that.

There was a discussion of having non-WSDOT roads be available for state routes in some situations (not as default) In order to do that there may need to be a disclaimer that non-WSDOT state routes for particular uses are not developed for use in . . . (transportation planning, travel analysis, etc.). Regarding concern about the quality of WSDOT data there is a new WSDOT centerline (GPS based) 3- 5 ft. 95% of the time. It is what will be put in WA-Trans.

What about the student who is first getting data and what they may need? Allyson proposed a document to explain the options and types of roads. The less we give them in the interface the more we have to give the user to explain why they aren't seeing something like Google Map.

Chuck feels it depends on how people are going to extract their data. If you allow a rectangle or polygon to be used then people need road names for that.

Ian felt we were talking about 5 different issues at the same time. The whole committee comes from different organizations and each group likes the geometry of the line work where it is from. The last thing we want is to degrade our data. We have to get out of needing the ability to move in and restore the line work just where it is at. One goal is to replace purchased data in state agencies. It will never be exactly the same as our current line work. We will have to "rubber-sheet" them together. Spokane stores three different versions of parcel data for different users. We need to set up a similar model in WA-Trans.

Ian feels we need to think about not so much our own uses because we are already GIS entities functioning, but we need something to replace purchased data. Store the native location. The minute you start dealing with cross-jurisdictional issues it is painful. We have roads that originate in Spokane County, go into Idaho and back into Spokane County.

In discussion priorities for road names, Ian feels in the case of Highway 2 the dominant name is Highway 2, not Sunset Highway. Then you get continuity. We need to store all the names. Ian proposed a rule of hierarchy of state, county, city. Then they can get alternatives by clicking on the segment. He suggests we design the display for the lowest common denominator and as simple as possible.

Allyson says as a local if you are looking for that local name as long as you get close you can figure out what you are looking at. Those who don't know what they are looking at you will be fine. But those who don't know will have difficulty.

Chuck doesn't think you can separate the view from what they want to extract. The view allows them to explore what they want to extract.

Dave Cullom said it would be nice to see line work by jurisdictional unit, have geographic area, combination of the two. An example would be when you only want to see US Forest Service Roads in Lewis County. Symbology is good because if you have different functional classes it is difficult to tell them about.

Decisions:

1. Use colors indicating road authority level for types of roads (state, county, city, etc.),
2. Use of hierarchy based on state, county, city, tribe, DNR, Forest Service, BLM, state parks, federal parks (Mike Fallon (BLM) is okay with that and suggested lumping all federal roads into one),

Michael's conclusion: When there are duplicates at boundaries we can put that on hold. So as long as we have the option of showing everything we are okay.

Action Item: Michael incorporate requirements into document for Data User Portal.

Accelerated Statewide Implementation

Tami presented an issue paper developed by a sub-committee responsible for outlining options and issues and making a recommendation regarding an accelerated implementation of WA-Trans. This subcommittee included: Michaellyn Garcia, Tami Griffin, Mac McKay, Pat Whittaker, and Tim Young.

The paper is Appendix B of this document. An updated Business Needs Assessment is Appendix C of this document. Please see the associated file "Task_list_statewide_Census_5-7-07.pdf" for the task list discussed in the issue document.

There were several options discussed and Option 3 was recommended. That included putting Census data in statewide, conflating Mobility data for county roads and putting WSDOT data in for state routes. Then add the data in a county at a time the counties that are already in WA-Trans. That would constitute the first release. After that a release would be done as additional counties were added.

Chuck was very concerned with the requirements to perform Mobility Conflation twice. He identified that Mobility conflation is going to cost a fortune. For Pierce County it took six to eight weeks for 2 people full time. Some of those participating had greater familiarity with the data than WA-Trans will. Also they had someone very familiar with mobility assisting. Chuck feels we would be better served by going to the counties and asking for data and telling them we will edge match it. Explain to them that we need an interim product. Chuck feels strongly we will get a better product. And since the counties will be told that we will go back to them for agreement points and data sharing agreements they may be more willing to go along with it.

Michaellyn thinks there are 3 – 5 counties that don't have data. Michaellyn has taken the data and worked out arrangements with the same parameters and then Census is conflating the edge matching. The counties have been willing to that.

Pat says if some entity has additional roads not in the local data set, we can still use Census to fill in gaps. Census bench marks twice a year. The schedule is that every county will be done in 2008.

Chuck says for Option 3 we have to wait until the end of 2008. We could start right now. Some of the counties have county public works roads departments and so we may run into that so we have to get city data or use Census.

Action Item: Tami add the option Chuck shared and meet with the group to evaluate it.

Metadata Minimum Requirements

The committee was asked to take the complete metadata standard for WA-Trans and select the required minimum metadata from the standard that a provider must give WA-Trans in order to participate. Please refer to:
http://www.wsdot.wa.gov/mapsdata/TransFramework/project_documents/WA-Trans_MetadataStandards_Current.pdf for the metadata standards.

Discussion:
Mike pointed out that we should have the Enumerated Domain Value and Enumerated Domain value definition. We can do this as a conditional.

There was a lot of discussion surrounding dates. Is what we want a current-ness reference for ground condition for when the item, event, etc. was collected? That makes sense if you use imagery. If your camera date stamps each image then that is what you use. The Collection date

tends to extend over a long period of time. How does the repaving effect the collection? We need a content related date.

Ian asked if we can split out the metadata versus feature level. Spokane has feature level records regarding updates.

It was suggested that the publication date might be good enough. That is the date that the person cuts the data on their side. There was a lot of support for that idea. As soon as the originator of the data hands it up the line that is the date. Any time in the future it may no longer be the latest.

The following represents the decisions reached:

New Required Metadata Attributes:

1.) Publication Date defined as the date the data was submitted (published from the Data Provider to WA-Trans) to WA-Trans. Originally this date was to be added, but it is actually included in the definitions as the Current-ness Reference (see item 7)

2.) Entity and Attribute Information.

3.) Horizontal Positional Accuracy

4.) Grid Coordinate System Name

5.) SPC Zone Identifier

Removed as Required Metadata Attributes:

1.) Contact Position

2.) Contact Fax Telephone

3.) Beginning Date and Ending Date (These are being replaced by the Current-ness Date (Publication Date)

Added as Conditional Required Attributes, (this is a new Blue indicator in the Metadata Standards):

1.) Enumerated Domain. This was added as conditional for those using codes, or identifiers for attributes in their systems that can be translated to other common identifiers. An example is the use of a City Id's like "TA" for Tacoma, which can be translated to the FIPS ID.

Other Changes to the Metadata Standards:

A.) Change the Metadata Standards reference to the complete FGDC and WAGIC standards. The change is to still include these standards, but refer to them as a "Quality Goal" for WA-Trans.

B.) Add of an example Metadata file to be used for reference and guidance for data providers.

Action Items:

- Michael make changes to Metadata Standards to illustrate minimum requirments,
- Michael change Data Provider Portal and related processes in support of minimum requirements.

Alleys and Driveways

Michael had found a standard for alleys and driveways that he proposed. See Appendix XX for this. We asked for opinions on the proposed classification. It was suggested that CRAB has a classification scheme that might be more appropriate. It was also suggested that we consider using a flag? These are generally un-named. They aren't considered public roads. There are a lot of private roads that have names.

Action Item: Michael and Pat look at existing standards and classifications to see what is out there. Consider the use of a flag.

Next meeting and Action Item Review

Michael's vacation is August 3 through August 19. Tami's vacation schedule is August 22 through September 16.

The next meeting is scheduled on October 17 from 9 a.m. to noon at the WSDOT NW Region HQ in Shoreline. We will take a van up from Olympia and have video-conferencing as well (particularly from Spokane).

WA-Trans Steering Committee Meeting Notes Appendix A
July 19, 2007
WA-Trans Data User Interface
Default Visual Display of Data

Background
The WA-Trans Data User Interface will be able to display data visually. The user will be able to view the data and perform basic "zoom" functions to view the data at different detail within the user interface. When a user initially accesses data in the WA-Trans user interface there will be very little information known, by the application, about what specific data a user would like to see in the visual representation. We also need generic products that can be made readily available to customers for quick download. I think that these are the kinds of products that we would want to make visually accessible to those searching the interface.

The question is:
What is the "Default" View of data in the WA-Trans Data User Interface visual display, given conditions in "Set the Stage" below? This default view may also end up being a default download.

Set the stage:
1.) Someone is accessing a three county data set of Snohomish, King and Pierce counties.
2.) There is data from each County, WSDOT, Department of Natural Resources (DNR), County Road Administration Board (CRAB), US Forest Service (USFS) and Bureau of Land Management (BLM) in the WA-Trans database for these counties.
3.) This data meets WA-Trans standards for integration and all agreements are in place as to what data is considered the best data from the best source.
4.) At boundaries there are multiple Descriptions, Road Names and Address Ranges for many of the segments.
5.) For state routes there are the local road names and the WSDOT route names for segments.
6.) There are some differences in segment geometry for a few segments and the different geometries are stored in WA-Trans for those segments.

Solution A

A user will be required to select from a variety of views. Consider these as WA-Trans **Product Types**. Initially there will only be only two WA-Trans Product Types. These Product Types would display data primarily based on the **Road Authority**, with the **Primary Flag** as support. The Road Authority is defined as the designated infrastructure owner (as legal authority) of that road segment (See Definitions in this document).

Product Types

Product 1 (LRS View):
A view concentrating on the routes and the associated LRS. This is a view which can be used for placement of events on the roadway and for planning purposes. For example the LRS view would have:
LRS by road authority (CRAB, WSDOT, DNR, BLM, USFS, etc. LRS values would be reflective of the road authority, provided in one output);
LRS by WSDOT

LRS by County/City (CRAB output)
LRS by DNR
LRS by BLM
LRS by USFS
etc
These can be further broken down by:
With Alleys and Driveways (where available) (makes use of secondary points)
Without Alleys and Driveways …

NOTE: This product type may have to be divided into two different product types: 1.) Single line road geometry and 2.) Dual line road geometry.

Product 2 (Geocoding View):
WA-Trans Geocoding view with the address ranges and road names related to those roads. In this case the road name will be the address range road authority. So instead of Hwy 99, the road name displayed in the LRS view, we may have Aurora Ave. as the road name.

This product can be the basis for E911, Census and for other geocoding purposes. This is also solves a problem when the State Patrol is using data.

Both of the above products need to consider the "road authority". For instance for an LRS of a state route let us assume that would be WSDOT. The various descriptions of a specific segment would all be included in WA-Trans, but in the case of the LRS would default to WSDOT. In the case of the Geocoding view of the same set of segments the descriptions of the road would default to the local provider.

Other Possible Solutions:

Solution B
Display everything. This will include all descriptions. With the different geometries this will also include the display of several segments for the same section of road.

Pros:
AP1.)Everything will be available for a user and they can then use functionality in the application to indicate parameter preferences to change the view as they wish.

Cons:
AC1.) The visual display will be very busy and possibly not readable, especially at jurisdictional boundaries.
AC2.) The user will need good directions and help to understand what is possible in the application to obtain a view they want.
AC3.) A user may not have the knowledgeable to select appropriate criteria without an extensive understanding and familiarity with the WA-Trans data structures.

Solution C
Before any display of data the user will be required to select criteria specifying the data they would like to view. After criteria are selected the data will then be displayed.

Pros:
BP1.) The user will have a view they would like to see.
BP2.) The user will be better able to determine if they need to change their criteria based on the view and criteria already selected.

Cons:
BC1.) The user will need good directions and help to understand what is possible in the application to obtain a view they want.
BC2.) A user may not have the knowledgeable to select appropriate criteria without an extensive understanding and familiarity with the WA-Trans data structures.

Definitions:

Product Type:
This is a new term. The intent term is to label what WA-Trans will provide as a product to a user. WA-Trans is not providing maps, but is providing data. This data is generally used for two general purposes, 1.) Road Planning and placement of event data using an LRS and 2.) Geocoding. Both of these sets of data have distinctive differences in the data being used, specifically the descriptions and how that data is applied to the segments.

Road Authority:
This is a term referring to the Infrastructure Owner, who in many cases will also be the Data Provider/Maintainer. This information is stored in the WA-Trans database and applies to the provider. Infrastructure Owner - An entity or organization that owns the physical infrastructure recorded within the WA-Trans System, and makes decisions about its planning, design, construction or maintenance. The owner could also delegate planning, design, construction or maintenance responsibilities to a third party. In addition, the owner could be the entity that legally owns, and has legal authority and responsibility over, the data that is being submitted to WA-Trans (i.e. the one who has legal authority to make decisions regarding the data that represents the physical infrastructure). In this case, the owner could also be the data steward. An example of an owner might be a larger entity such as a state government agency, county or municipal/city government.

Primary Flag:
Also stored in the WA-Trans database is a flag on each feature indication if this is the primary record to be used instead of an alternate. For instance this will differentiate between an alternate road name from the same provider. Making use of the "Primary Flag" fields will help us quickly

arrive at a generic, acceptable product. These flags (formerly known as the "preferred flag") will help us discern the most appropriate geometry, reference point, segment description, segment road address, etc. for the location. Generally, these will be the items provided by the road authority, especially the descriptive items (WSDOT for state highway info, counties for addressing and road names, etc.).

For Product Types the "Road Authority" and the Primary Flag will need to be considered together.

Route (LRS)
This is a product WA-Trans will be providing as the LRS View. Any line feature, such as a street, highway, or rail line, which has a unique identifier and a measurement system stored with the geometry.

Route (Network Analysis)
This is something WA-Trans will **not** be providing as a product, but will store the building blocks necessary for a user to construct in their systems. In network analysis, a route is a path through a network, where a network is an interconnected set of points and lines that represent possible routes from one location to another. For geometric networks, this consists of edge features, junction features, and the connectivity between them. For network datasets, this consists of edge, junction, and turn elements and the connectivity between them. For example, an interconnected set of lines representing a city streets layer is a network.

WA-Trans Steering Committee Meeting Notes Appendix B
July 19, 2007

Options for Accelerated Statewide Implementation of WA-Trans

Background:

The Washington Transportation Framework Project for GIS (WA-Trans) is a multi-year project to create and maintain a complete, seamless, up-to-date and updateable transportation GIS dataset. The product is flexible: it will not be dependent on any specific GIS software. A solid business case has been presented with a return on investment (ROI) of just under 11%. Several factors stand in the way of receiving complete funding. First, WA-Trans is complex. The deliverables are not easily understood outside of the GIS and IT worlds. The business community needs to see results to completely realize the value and long-range benefits of WA-Trans. Second, with the current implementation strategy of appending local data county by county, a statewide dataset is not expected to be available until 2011. Third, it has a high price tag. The documented optimal business value is dependent on using data from local governments as a major point of the implementation strategy. An accelerated implementation strategy with an intermediate statewide deliverable is considered here as a means to help secure funding and receive partial benefits sooner.

This issue paper evaluates intermediate deliverable options. New U.S. Census Bureau data are scheduled for delivery in 2008. This presents the opportunity to combine these data with WSDOT data and the County Road Administration Board's Mobility data (Mobility) to create an intermediate statewide WA-Trans data set. Other statewide data sets may also be considered. This document examines issues associated with such an intermediate product. The WA-Trans Business Needs Assessment was modified and used in this evaluation.

Participants

WA-Trans Accelerated Implementation Committee includes: Tami Griffin – WSDOT, WA-Trans Project; Michaellyn Garcia – U.S. Census Bureau; Mac McKay – WA Dept. of Natural Resources; Pat Whittaker – WSDOT, Tim Young – WA Dept. of Fish and Wildlife.

Problem Statement:

The WA-Trans Project is chartered to address the ever growing need for comprehensive statewide transportation GIS data. It will take a significant amount of time to develop WA-Trans from the local level up. This framework project is considering the use of a pre-existing statewide data set such as Census Geographic Data, to be spatially improved statewide by 2008, as the basis for this effort. This document explores the variety of options associated with this accelerated implementation and proposes a recommended solution:

WA-Trans Steering Committee Meeting Notes Appendix B
July 19, 2007

Options for Accelerated Statewide Implementation of WA-Trans

Option 1

- Continue with the original implementation strategy of working with local governments to build a statewide release. Gaps in local data will be filled in with Census Geographic Data.

Pro:

- Maintains the project as currently defined; no shift in focus; no loss of momentum,
- Assures local governments that their data is a key basis for development of the WA-Trans framework data,
- Minimizes the number of times users of the data have to alter their systems, manages expectations, and has less impact on related dependencies,
- Minimizes the rework (as opposed to first using the Census data and then reworking all the counties),
- Minimizes the requirement of maintaining and supporting the existing product while adding local data,
- Supports a greater level of temporal accuracy,
- Meets all business needs except Priority 8, which is called Drainage Systems and Routes from all roadways. This will require data that is currently outside the scope of WA-Trans.

Con:

- Much longer timeline to product delivery,
- Potential loss of funding and backing,
- Less to show for all the work done to date,
- No opportunity to have widespread testing and feedback of the product until all local data is in,
- Business needs met more slowly,
- Less integrated dataset for first release.

Option 2

- Complete incorporation of Census Geographic Data with WSDOT and Mobility data based on strategy outlined in statewide task list and make first release. Make subsequent WA-Trans releases as each county is added.

Pro:

- Phased approach provides for intermediary feedback with less initial investment,
- Significantly earlier first release,
- Provides for a continuous connected dataset and tests the concepts of the data user portal and downloading,
- Simplifies elements of conflating the various data because it is all edge matched, etc. Complex agreements are developed on the backend, as local data is added,
- Provides a dataset to show to help "sell" working out agreements,
- Eventually engages local governments, who may desire to replace Census data with their own,

- Provides a deliverable that meets the highest priority business needs for local and regional users for data outside of the user's jurisdiction,
- Provides something that meets many of the state level and federal level business needs initially,
- Some framework benefits achieved sooner.

Cons:

- Local providers of "newer" data would have to wait longer to see their data in WA-Trans,
- Unrealistic expectations are set about WA-Trans until it has a mix of data sources including local data,
- Initially data will be less temporally accurate.
- Fears of dissatisfaction with potential users,
- May make local governments less likely to participate if they feel something already exists,
- More costly in the long run,
- Potential for significant rework, particularly when conflating Mobility data,
- Lower quality of data (less coverage and accuracy) in some locations.

Option 3

- Complete Census Geographic Data based on strategy outlined in statewide task list. Then add all counties completed to date and make first release. Make subsequent releases as more counties are added.

Pro:

- Participating local governments get a more immediate confirmation of their data in WA-Trans,
- Provides a deliverable that meets the highest priority business needs for local and regional users for data outside of the user's jurisdiction,
- Provides a dataset that meets many of the state level and federal level business needs initially,
- Where locally provided data is included a higher level of temporal accuracy will be available,
- Provides users a more immediate example of the benefits of WA-Trans when multiple data providers participate,
- Less rework of Mobility data conflation since some local data is already included.

Con:

- First release of optimal solution delayed,
- More costly in the long run than option 1,
- Potential for significant rework, particularly when conflating Mobility data in counties where Census data is used,
- Lower quality of data (less coverage and accuracy) in locations where local data is not utilized.

Options for Accelerated Statewide Implementation of WA-Trans

Option 4

- Create a county and state data set (using Census, Mobility, and WSDOT data) and then add local data.

Pro:

- Provides a nice uniform statewide data set in terms of spatial coverage and data type,
- Quickest.

Con:

- Will only meet five of the 20 identified high-priority business needs,
- Will not meet the highest priority business needs,
- There will be no ability to maintain the dataset until local data is added (all rests with the state)
- Lower quality of data (less coverage and accuracy) in some locations.

Option 5

- Do Nothing.

Pro:

- Saves the costs of the project (from the time the decision is made).

Con:

- Forces the purchase of data (billing tax payers twice), proprietary data, etc.
- Does not meet any business needs associated with sharing if you purchase,
- If you wait for TIGER you can share but the temporal accuracy will degrade over time,
- Does not meet many of the business needs for emergency management and transportation planning,
- Doesn't leverage the work done on data model and standards and collaborative inter-governmental relationships,
- Forces spending money in other ways to accommodate not having a data set,
- Doesn't honor commitments made to grantors, partners and collaborators,
- Contrary to the Washington GIT strategic plan,
- Based on WA-Trans Business Case potential loss of at least 11% on investment.

Costs

At this time it is difficult to estimate costs. Cost factors relevant to this evaluation include:

- It is not free to use Census Data. While the data is publicly available there will be costs associated with building a translator, translating, and conflating WSDOT and Mobility data to WA-Trans.
- It is very likely that a translator will have to be built regardless of option chosen. This is because the Census Data may be the basis for local governments and tribes which don't yet have data.
- Integration of WSDOT data may only have to be done once. However, conflation of addresses to state routes will have to be completed both on the Census data and any

added local data. Additionally, edge-matching and agreement points would have to be done, and then redone.

- The largest extra cost, and a very significant task, is the conflation of the Mobility data. This would be required to meet many of the identified core business needs. This task would have to be done once for Census Data, then again for many counties.
- Since conflation is such a big part of WA-Trans work the need to evaluate and purchase a robust conflation tool is critical. WA-Trans had originally scheduled this as part of the One-Road Pilot Phase II which is scheduled to begin in 2008. However, such a tool would have to be in-house and ready to go with trained staff before we could begin this conflation effort.

It is anticipated that meeting several of the business needs earlier, albeit with less temporal accuracy, will assist with the return on investment and may make undertaking these extra costs very worth while.

Recommended Solution

At this point in time Option 3 addresses the problem statement and seems to provide the most benefit with the least negative consequences. Until costs are accurately assessed a cost benefit of the options cannot be undertaken. This document attempts to provide an objective method of evaluating the options. The Accelerated Implementation Committee of the WA-Trans' Steering g Committee recommends Option 3.

WA-Trans Combined Priorities for Use in Evaluation

Priority 1

Business Need
37, 36, 69

Title
Map Production including address matching and event location based maps, County Atlases

Description
Organizations must meet the need to produce basic cartographic products. This functionality includes geometry, accuracy, and topological integrity. A fundamental use of the transportation network will be location determination by address. Virtually every agency/party employing GIS technology has some need to geo-code data to a street address. Many address data structures exist. A viable and widely employed model might be that used by the U.S. Census Bureau for TIGER. The County road atlas is a digital and paper product that is produced to show the public and private roads in the County. Scale is 1"=2000'.

Audience
Federal Government, State Government, Regional Government, Transit, Counties, Cities, Emergency Management, Washington E-911, Bureau of Census, WSDOT, Public

Function
Transit, Counties, Cities, Emergency Management, E-911, Economic Development, Census Gathering and Analysis, Transportation Planning, Public Communication, Environmental Analysis, Utilities, any function needing a street centerline base map,

GIS Function
Mapping, Event Location

Source
Community Transit, Seattle Public Utilities, Pierce County, various other Counties and Cities

Legend:
Census Meets Need Census data comments
WSDOT Meets Need WSDOT data comments
Mobility Meets Need Mobility data comments

WA-Trans Combined Priorities for Use in Evaluation

Priority 2

Business Need
39, 82

Title
Event Location Analysis with Geocoding/Address-matching and route/milepost, GPS coordinates and other methods

Description
Various event databases are maintained which reference street addresses or Road Number and Milepost. Mapping and analysis of these events is critical to management of transportation resources. GIS geocoding function is used to map various data sets such as: businesses, events, business licenses, jurors, crimes, and complaints. The road centerline file with address ranges is utilized as the base map and for the geocoding function.

Audience
WSDOT, Counties, Cities, County Road Administration Board, Strategic Freight Transportation Analysis Project, Public Access

Function
Public works, County Engineers, Transportation construction projects, Project Scoping, Project Design, E-911, Emergency Management, Law Enforcement

GIS Function
Event Location

Source
Pierce County and various others

Priority 3

Business Need
40

Title
Public Access to Records

Description
County Road Authorities are statutorily required to keep records of all roads within their

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jurisdiction, and to provide those records to the public.

Audience
Counties

Function
County Engineers

GIS Function
Mapping

Source
Interagency Function, Public Interface

Priority 4

Business Need
5 Census meets this by use of addresses to assist with routing

Title
Routing

Description
There is a need for evaluating and mapping alternate routes for a variety of functions on all roads including county, city, state and private roads. This includes the need to buffer an affected area for analysis. This would be used for emergency management, traffic control, homeland security, freight congestion, infrastructure impact analysis and transportation construction projects. Routes to reduce freight congestion. There is also a need to communicate alternate routes to the public.

Audience
WSDOT, Counties, Cities, E-911, Freight Mobility Strategic Investment Board, Strategic Freight Transportation Analysis Project

Function
Public works, Transportation construction projects, Emergency management, Transit organizations, Military, Public utilities, Freight

GIS Function
Spatial Analysis, Event Location

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Source
WSDOT Olympic Region Lacey Project Engineers Office, WSDOT Emergency Response, WSDOT Olympic Region Highway and Local Programs Engineer, WSDOT Ferry Terminal Engineering, City of Seattle Department of Transportation, Strategic Freight Transportation Analysis Project

Priority 5

Business Need
38

Title
Roads Inventory to the County Road Administration Board (CRAB) (County, Tribal, City, State)

Description
County Road Authorities maintain records of maintained roads with inventory information (pavement type, pavement width, functional classification, ADT) that is used to determine gas tax allocation. BIA is also collecting an inventory of Tribal Roads City Roads, County and State inventory is needed for Federal Classification. This event based data would be useful for freight planning. This data also includes the basis for route/mile post linear referencing system for county roads statewide.

Audience
WSDOT, Counties, County Road Administration Board, Federal Highway Administration, Bureau of Indian Affairs, Tribal Government, Strategic Freight Transportation Analysis Project

Function
Public works, County Engineers, Transportation construction projects, WSDOT Transportation Data Office, Bureau of Indian Affairs, Tribal Governments, Federal Highway Administration, Freight

GIS Function
Event Location

Source
Counties

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Priority 6

Business Need WSDOT For State Routes
92

Title
Phase II E-911 Cell Phone X,Y Coordinate Mapping

Description
For maximum benefit to the local E-911 call centers i.e., Public Safety Answering Points - PSAP's, the implementation of the FCC's Phase II Wireless regulations will require automatic GIS mapping capabilities within these centers in order to map the actual cell phone locational x,y coordinates that are going to be generated by these calls. This requires that WA-Trans support: 1 address geocoding, 2 linkage of x,y coordinates to other nearby GIS features (ex. road address segments, dispatch units, beat units, etc.) 3 the ability to geocode to digital ortho-photography for rural and wilderness related cell phone calls.

Audience
Washington State Patrol, WA Dept. of Military (EMD) Emergency Operations Center, Local PSAPs, local law enforcement, WSDOT, NIMA

Function
E-911 Public Service Answering Points, Emergency Management, Law Enforcement, Fire Response, Homeland Security

GIS Function
Event Location, Map Production, Spatial Analysis

Source
Washington State Department of Military (EMD), Spokane County Fire Districts

Priority 7 Temporal Accuracy Issue with Census Data

Business Need
102

Title
Collision Location

Legend:
Census Meets Need Census data comments
WSDOT Meets Need WSDOT data comments
Mobility Meets Need Mobility data comments

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Description
Collisions are located at all levels of government and reported to the Washington State Department of Transportation. The accuracy of the location has an impact on how collisions are classified and grouped. The groupings impact the prioritization of public funding of safety mitigation on the roadways. There is a need for the ability to accurately locate collisions on all roads. Additionally there is a desire to provide law enforcement at all levels with the ability to locate collisions using a tool which relies on a common base map to identify the location of collisions based on various location methods (address, route milepost, GPS coordinate, etc). This data can then be reported compiled, tracked and shared based on location.

Audience
Washington State Patrol, Sheriffs, Police, WSDOT, Washington Legislature, Traffic Safety Commission

Function
Law Enforcement, Public Works

GIS Function
Event Location, Spatial Analysis

Source
Washington State Department of Transportation

Priority 8

Business Need
32

Title
Drainage system features and routes from all roadways

Description
There are many potential interfaces for drainage feature data to be shared between the WSDOT and county and city government organizations. When there is a chemical spill on the roadway local jurisdictions need to know the drainage so they can determine the impact to their water, lands and emergency services. Some of WSDOT's culverts and other drainage features cross county and municipal roads and their state of repair affect the roadway they cross. This information is also used to plan for emergencies with local fire and police. There is also county and municipal drainage that goes into WSDOT right-of-way, roadways and other transportation features that impact WSDOT maintenance. Another use of this information is during project scoping both by WSDOT

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and county and city public works. Drainage feature information is needed along the roadway and where it goes is also needed. The Washington Department of Health has expressed an interest in bridges as well as the previously mentioned structures for drinking water management.

Audience
WSDOT, Counties, Cities, Washington Department of Ecology, Washington Department of Health

Function
Public works, Emergency services, Washington Department of Ecology, WSDOT, Washington Department of Health

GIS Function
Event Location, Spatial Analysis

Source
WSDOT Maintenance and Operations, Washington Department of Health

Priority 9 Temporal Accuracy Issue

Business Need
68, 67, 49

Title
Address Maintenance and Lookup

Description
Many county and state departments utilize the GIS system to view information at an address. The address is geocoded to the road centerline/address file. Once the address is located other data themes and data sets are viewed. This is utilized by all county departments. The County addressor maintains the centerline and address information for the county in order to provide valid address information to other departments and citizens. Additionally the WUTC-regulated companies can provide solid waste services within specific geographic areas. The location of a specific address is needed to determine which company has the rights to service at a particular location.

Audience
State, County and Local Governments

Function
Public Works, Emergency Management, Law Enforcement, Public Utilities, Regulation,

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Public Health and Safety, Consumer affairs, Public affairs, Customer notice, Compliance, Accounting, Auditing, Policy

GIS Function
Event Location

Source
Pierce County, Washington Utilities and Transportation Commission

Priority 10

Business Need

12

Title
Statewide Base Map to use in Communication

Description
There is a need for a statewide base map that extends beyond jurisdictional boundaries to illustrate scenic byways and provide communication for funding with the legislature, local partners, and the Federal Government.

Audience
WSDOT, Counties, Cities, Puget Sound Regional Council

Function
Planning, Program Management, Public Communications

GIS Function
Mapping, Spatial Analysis, Interagency Functions

Source
WSDOT Olympic Region Highway and Local Programs Engineer, WSDOT Program Management, WSDOT Rail Office

Priority 10 Census added because addresses are critical for this. Temporal

Business Need accuracy issue

13, 43, 44

Legend:
Census Meets Need Census data comments
WSDOT Meets Need WSDOT data comments
Mobility Meets Need Mobility data comments

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Title
Coordination of Transportation in an Emergency, Access into a Disaster Area, Determination of Evacuation Routes

Description
In the Washington State Comprehensive Emergency Response Plan it is WSDOT's responsibility to coordinate all transportations (all modes, all routes) for the state. The Agency must collect information about closures and routing. During the Nisqually Quake the Governor asked for maps including alternate routes. There is a need for a method of collecting, storing and illustrating areas of closure and alternate routes. This requirement can be extended to include a mechanism for storing and communicating all closures in various situations including terrorist attacks, natural disasters or construction.

In a disaster or major emergency it is necessary to bring people and supplies into the disaster zone. For Washington this can include over mountain passes in snow. Planning for such an even includes modeling possible routes for bringing in emergency assistance, National Guard, FEMA and other organizations needed. Freight logistics need to be included in planning emergency supply lines for moving freight and goods into and out of secured areas. Then in an actual event determination of which routes to use and communication of such routes is necessary. WA-Trans can facilitate determining access into a disaster area. In a major emergency evacuation routes must be identified and communicated. In planning for an emergency potential evacuation routes must be determined. Software must support changing these routes based on type of emergency, location of emergency and condition of the evacuation routes. Freight needs must e included in evacuation route planning - ex. which routes can accommodate heavy trucks?

Audience
WSDOT, Counties, Cities, E-911, Emergency Management

Function
Emergency management, Emergency response, Transportation maintenance, Transportation operations, Transit organizations, Military Emergency Management, Relief Organizations, Counties, Cities, Freight

GIS Function
Event Location, Mapping, Spatial Analysis, Dispatch, Interagency Functions

Source

Legend:
Census Meets Need Census data comments
WSDOT Meets Need WSDOT data comments
Mobility Meets Need Mobility data comments

WA-Trans Combined Priorities for Use in Evaluation

WSDOT Emergency Response, WSDOT Council for Disaster Planning, King County Emergency Management, WSDOT Freight Strategy & Policy Office

Priority 11 When combined with other data; temporal accuracy issue

Business Need
88

Title
Support in homeland security on public lands

Description
This is a new and emerging area for the Federal Government and may apply to some other levels of government as well. Issues include emergency response on public lands, proximity of roads to pipelines, power lines, hazardous waste sites, toxic spills, bridges, etc.

Audience
US Forest Service, US Bureau of Land Management, National Parks Service, WA DNR, WA State Parks, WSDOT, Public Works and Roads Departments, WSP, Local Law Enforcement, WA EMD, Local PSAPs

Function
Public Lands Management, Road Design, Construction and Maintenance, Emergency Management, Law Enforcement

GIS Function
Mapping, Spatial Analysis

Source
US Forest Service

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Priority 12 Minor Temporal Accuracy Issue

Business Need
21

Title
Work with HPMS/FC replacement

Description
The Highway Performance Monitoring System and Functional Classification Systems are maintained by WSDOT for the FHWA. This is database of all miles of public roads in the State. It is the basis for determining eligibility for Federal-aid funding for functional classification modifications and updates as well as the basis for designation of the National Highway system. WSDOT is mandated to maintain data about out all roads in both rural and urban areas and determine the functional usage of existing roads and streets. These systems get data from many of the partners that WA-Trans will. Aligning these systems with WA-Trans would prevent unnecessary duplication of data and effort. Collecting the same data once would facilitate sharing from local governments. There is an effort to replace them with a single system and this is where alignment might best be facilitated. This effort wants a functional class map, which shows all roads and road miles included in the functional classifications sent to the Federal Government. It is hoped that WA-Trans and HPMS/FC replacement will facilitate the exchange of road information between cities, counties and the State.

Audience
WSDOT, Counties, Cities, Federal Highway Administration, County Road Administration Board, Metropolitan Planning Organizations, Regional Transportation Planning Organizations, Strategic Freight Transportation Analysis Project, Transportation Improvement Board

Function
Government transportation organizations

GIS Function
Event Location, Mapping, Spatial Analysis, Interagency Functions

Source
WSDOT Transportation Data Office, City of Seattle Department of Transportation

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Priority 13 Temporal Accuracy Issue

Business Need
93

Title
AVL X,Y Coordinate Mapping

Description
AVL (Automatic Vehicle Location) data, provided by vehicles equipped with AVL technology can be combined with WA-Trans data to provide support in the following areas: fleet management - determining the most efficient routes and vehicle use, determine actual delivery costs, check employee on the road compliance; locating vehicles in an emergency - finding the X,Y coordinate, determining an addressing and dispatching emergency vehicles to the site using shortest path. This requires WA-Trans to have street centerline, address geocoding, and a dispatch network. This is also useful for fire response in dispatching fire trucks. Homeland security can use this technology to track vehicles that might contain explosive or toxic materials to make sure they are being used properly.

Audience
Local Public Works Depts., Ecology, Health Departments, Washington State Patrol, Emergency Management Division, WA Emergency Operations Center, Local PSAPs, Local Law enforcement, WSDOT, NIMA

Function
Routing, Delivery Service, Permit Enforcement, Permit Issuance, Trash Collection, Emergency Management Vehicle Tracking, Law Enforcement Vehicle Tracking, Freight Management, & more!

GIS Function
Event Location

Source
WA State Dept. of Military Emergency Management Division, Spokane County Fire Districts

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Priority 14

Business Need
81

Title
Emergency Management Event Mapping

Description
Mapping of emergency events that could be a point location at an address, a road segment that is closed, an area that is flooded. The road centerline file is used as a backdrop to plan response and recovery.

Audience
State, County and Local Governments

Function
Emergency Route Planning

GIS Function
Event Location, Mapping, Spatial Analysis

Source
Pierce County

Priority 15 Local road duplication

Business Need
56

Title
Washington State Transportation Data for the National Map

Description
The USGS National Map Project needs the most efficient way to access data. Currently the data the National Map Project will use will come from local data sources with individual agreements for each. WA-Trans would maintain those agreements and provide one source for the transportation data for the National Map, thus simplifying the process and cost of gathering and maintaining the data significantly.

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Audience
All Government, Public

Function
National Map Production, General Public, Businesses, Tourists

GIS Function
Interagency Functions

Source
US Geological Survey

Priority 16 WSDOT may have all bridges statewide
Business Need Don't know if CRAB will locate bridges
15

Title
Facilitate Bridge Data Sharing Between Various Road Authorities

Description
There is a variety of bridge data needed statewide. The WSDOT Bridge Preservation Office is federally mandated to report on bridges statewide. The extent of this mandate includes city, county, state and some privately owned bridges with public traffic. They are responsible for inspections on regular inventory, which includes big interchanges, bridges over dry gulches, other raised highways and anything over water and all tunnels. They are responsible for movables, and specialized structures such as the Narrows and floating bridges. They need to know the following about bridges: Location of bridges and structures (tunnels, etc), Cross streets close to bridges, Stream or water body names, Proximity of bridge to railroad, Mechanism to share bridge inspection status, type, frequency, due dates, whether navigable water, location with counties and cities, Need structural bridge information from counties which shows up on statewide map Need information from local governments to assist in bridge prioritization for repair or retrofit in situation of disaster (ex. earthquake) where many may need to be repaired/retrofitted at once. Need information about egress routes into tribal lands and structures on them Need data from Federal Government about backcountry bridges for their inventory Cities and counties would like a better mechanism for sharing bridge data with WSDOT and better access to WSDOT data about bridges within their jurisdiction that they don't have jurisdiction over.

Audience
WSDOT, Counties, Cities, E-911, US Geological Survey, US Forest Service, US Bureau

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of Land Management, FHWA

Function
Public works, Transportation maintenance, Transportation operations, Emergency management

GIS Function
Event Location, Interagency Functions

Source
WSDOT Bridge Preservation Office, City of Seattle Department of Transportation

Priority 17 Census data has been identified as useful. Temporal accuracy issue

Business Need
22

Title
Support the "Trip Planner" Project effort

Description
The WSDOT Public Transportation Office is working on an effort called "Trip Planner" that ultimately involves providing the public with information about what transportation options are available from one location to another. It involves routing, transit information and is anticipated to be web based. Initially the project focuses on getting information on fixed routes systems. Then it will work on getting information about demand response and other transportation. Eventually would become a doorstop-to-doorstop trip planner anywhere in the state. This project depends on a statewide base map with addressing and routing for multiple modes. The project will serve all commuters who use public transportation and would be particularly useful to social services and others who plan transportation for ADA and low income individuals.

Audience
WSDOT, Kitsap Transit, Community Transit

Function
Social Services, Chamber of Commerce, Employment organizations, Commute Trip Reduction, Transit systems

GIS Function
Event Location, Mapping, Dispatch

Legend:
Census Meets Need Census data comments
WSDOT Meets Need WSDOT data comments
Mobility Meets Need Mobility data comments

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Source
WSDOT Public Transportation Office, WSDOT Transportation Demand Management Office

Priority 18

Business Need
103

Title
Support location of schools, day cares, etc, for law enforcement to place sexual predators back into a community and various other law enforcement type location applications

Description
The Washington Department of Corrections must approve house locations for sexual predators as they return to the community and halfway houses, etc. They get data on school and day care locations from the Washington Department of Health and the Washington Department of Social Health Services. They need the ability to place that data on an accurate and up-to-date base map for the purposes of determining safe and legal locations.

Audience
Washington Department of Corrections, other law enforcement

Function
Social Services, Law Enforcement

GIS Function
Event Location, Mapping, Spatial Analysis

Source
Washington Department of Corrections, Washington Department of Health, Washington Department of Social Health Services

Priority 19

Business Need
52

Title

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Unimproved or Temporary Roads

Description
The WUTC Pipeline Safety Division is required under RCW 81.88.080 to assist local governments in obtaining hazardous liquid and gas pipeline location information and maps. We are also obligated to develop a GIS that is sufficient to meet the needs of first responders.

Audience
State Government, Local Government

Function
Pipeline access points, Construction inspections, Possible evacuation routes

GIS Function
Event Location, Mapping, Dispatch

Source
Washington Utilities and Transportation Commission Pipeline Safety Division

Priority 20

Business Need
97

Title
International Border Crossing Delay for Commercial Vehicles

Description
International border crossing delay is caused by several factors, such as truck volumes, checkpoint staffing and hours of operation, volume of other type of vehicles, time needed for clearing customs, and increased security measures. Knowing average wait and processing times, truck volumes, border crossing and alternative route information can benefit both short and long term freight planning.

Audience
WSDOT, Strategic Freight Transportation Analysis Project, MPOs & RTPOs

Function
Freight

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GIS Function
Event Location, Spatial Analysis

Source
USDOT/Homeland Security, B.C. Ministry of Transportation, International Mobility and Transportation Coalition (IMTC), Eastern Border Transportation Council via WSDOT Freight Strategy and Policy Office

Legend:
Census Meets Need Census data comments
WSDOT Meets Need WSDOT data comments
Mobility Meets Need Mobility data comments

WA-Trans Steering Committee Meeting Notes Appendix D
July 19, 2007

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Access Classification - Street and Driveway Classification		
Classification	**Type of Connection**	**Driveway Use**
Class I	Non-commercial	For access to single family dwellings, Multiple family dwellings of three or less dwelling units, Agricultural land and field access
Class II	Minor Commercial	Medium volume generator (less than 500 trips per day), Access to property other than Class I or Class III Driveways
Class III	Major Commercial	High volume generators (500 or more trips per day), Shopping centers, industrial parks, office parks, colleges, residential, complexes and subdivisions and etcetera
Class IV	Public or Private Roads	New public or private roads or streets